

Journal of Pharmaceutical Advanced Research**(An International Multidisciplinary Peer Review Open Access monthly Journal)**Available online at: www.jparonline.com**Anti -Aging and Indian natural drugs: A Review****Sangita. V. Badgujar^{1*}, Vishal B. Badgujar²**¹R.C. Patel Institute of Pharmacy, Shirpur - 425405, Dhule, Maharashtra, India.²Swami Institute of Pharmacy, Abhona, Nashik, Maharashtra, India.

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ABSTRACT: Skin indicates the age of the person. As the skin is an organ that is exposed to the environment, which results in wrinkles, loss of elasticity and skin becomes rough. Aging mainly occurs due to damage from free radicals produced as by products of normal metabolism, or toxins created by various heavy metals, toxins, pollutants, allergens, etc. Many herbs are renowned for their Anti-Aging effect. Herbal ingredients play a vital role in reversing the aging of the skin. Herbal ingredients are cost-effective and free from side effects as compared to synthetic ingredients. Anti-Aging herbs are also known as adaptogens. This review put forward direction for herbal formulation as Anti-Aging.

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INTRODUCTION:

The aging of the skin is a biological process influenced by intrinsic and extrinsic environmental factors. It results in the thickened epidermis, discoloration, wrinkles, dullness, and roughness of skin. Aging occurs as people grow older. The outer covering of the body is skin. The skin protects human beings against environmental changes. Skin is composed of three primary layers like Epidermis, Dermis, and Hypodermis. The epidermis is the outermost layer of skin consisting of five layers like Stratum corneum, Stratum lucidum, Stratum granulosa, Stratum spinosum, Stratum basal (innermost layer of the epidermis). Protein (keratin) is present in the superficial layer of the epidermis. It

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protects skin from light, heat, and chemicals [1]. Due to environmental factors, nutrition and genetic makeup changes in skin occur. The main factor is sun exposure, which can be seen by the difference in the area covered and exposed to the sun. With aging, the outer skin layer (epidermis) becomes thin. The connective tissue reduces the skin's elasticity called elastosis. The blood vessels of the dermis become more fragile, which results in bleeding under the skin. Sebaceous glands produce less oil as you age. And leads to dryness and itching of skin. Disorders of skin are more common in older people. The prevention of aging of the skin can be prevented by good nutrition and fluids [2]. Aging of skin and loss of elasticity are all related to changes in the collagen and elastic fibers of the skin, due to diet by promoting cross-linking of collagen fibers. Research has proven that the body is unable to repair these crosslinks. With the accumulation of advanced glycation end products (AGEs), structural changes in the skin can occur, resulting in increased stiffness and reduced elasticity. Cooking processes that lead to higher levels of AGEs include grilling, frying, and roasting. Herbs like cinnamon, cloves, ginger and garlic, and fruits, vegetables, contain lipoic acid that inhibit the production of AGEs [3]. Frequently researched antioxidants such as carotenoids, tocopherols and flavonoids, as well as vitamins (A, C, D and E), essential omega-3-fatty acids, some proteins are capable of promoting fewer wrinkles. A higher intake of Vitamin C and linoleic acid gives a better skin appearance [4-5].

Mechanism of skin aging:

Extrinsic skin aging:

As earlier discussed skin aging is caused by environmental factors, such as exposure to the sun rays, sleeping positions and smoking. Extrinsic aging is caused by chronic exposure to UV light, so it is also known as photoaging [6-7].

Intrinsic skin aging:

It is the natural aging of the skin due to the inherited gene, therefore also termed as chronological aging. The mechanism for intrinsic and extrinsic aging is the same. Oxidative cell metabolism plays a key role in chronological and photoaging [8].

ANTIAGEING AND NATURAL HERBS:

Herbs play a key role in reversing the aging of the skin. Different phytoconstituents present in herbs provide nutrition for the skin. Herbal products are claimed to

have efficacy and acceptability due to routine use in daily life and are devoid of side effects commonly seen with synthetic products. Hence industry more focuses on herbal products. Medicinal plants revitalizing skin aging are listed below [9-13].

Aloe:

It is the dried juice of leaves of plant *Aloe barbadensis*, family *Liliaceae* (Fig 1). It mainly contains anthraquinone glycosides. The principal active constituent of aloe is aloin, among which barbaloin is the chief constituent. Isobarbaloin, β - barbaloin, aloemodin and resins are other constituents. Aloe juice obtained from leaves is used in Anti-Aging and anti-wrinkle creams and moisturizers. Aloin A and B used in the treatment of wrinkles and aging have shown the property to inhibit the activity of collagenase, the enzyme which causes degradation of collagen fibers.

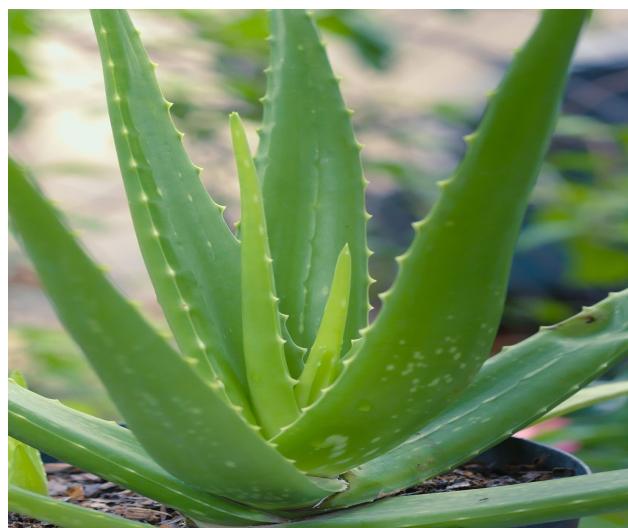


Fig 1. Leafy Aloe vera Plant.



Fig 2. Matured Amla plant.

Amla:

This consists of dried as well as fresh fruits of the plant *Embllica officinalis*, family *Euphorbiaceae* (Fig 2). Amla fruit is the richest source of vitamin C and also contains fat, phyllembelin and tannins. Minerals like phosphorus, iron and calcium are present abundantly. Vitamin C is considered important to slow the aging process, which improves skin health. Aging is the result of damage to cells and tissues by oxygen-free radicals. Vitamin C is a rummager of free radicals.

Turmeric:

Turmeric consists of dried as well as, fresh rhizomes of the plant *Curcuma longa*, family *Zingiberaceae* (Fig 3). Turmeric contains curcuminoids which are yellow-colored substances. Curcuminoids mainly contain curcumin. It also contains volatile oil and resin. The chief constituent of Turmeric is curcumin which acts as a free radical scavenger and as a singlet oxygen quencher. Hence curcumin plays a vital role in antiaging.



Fig 3. Dried Turmeric and its powder.

Honey:

Honey is a sugar secretion deposited in the honeycomb by the bees, *Apis mellifera*, family *Apidae* (Fig 4). Honey is an aqueous solution of glucose, fructose, and sucrose. It also contains flavonoids, maltose, enzymes, gum, vitamins, proteins, phenols, etc. The antioxidant property of Honey is due to the phenolic compounds and flavonoids, which helps to prevent wrinkles.

Ginseng:

Ginseng is the dried root of *Panax ginseng*, family *Araliaceae* (Fig 5). Ginseng contains saponin glycosides like Ginsenosides, Panaxosides, and Chikusetsusaponin which are responsible for the various activities of ginseng. The chief constituent of Ginseng is Ginsenoside which is responsible for the Anti-Aging activity of ginseng.

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Fig 4. Honey.

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Fig 5. Ginseng root.

Liquorice:

Liquorice consists of dried peeled, unpeeled, roots and stolons of *Glycyrrhiza glabra*, family *Leguminosae* (Fig 6). Triterpenoid saponin is the chief constituent of liquorice known as glycyrrhizin (glycyrrhizic acid), which is a potassium and calcium salt of glycyrrhizinic acid. It also contains flavonoids, liquiritin and isoliquiritin. The Anti-Aging activity of liquorice is due to flavonoids, which act as superoxide scavenger and prevent wrinkles.

**Fig 6. Liquorice.****Jatamansi:**

It consists of dried rhizomes of *Nardostachys jatamansi*, family *Valerianaceae* (Fig 7). It contains volatile oil, resin, sugar, contains jatamansicacid, ketones, jatamansone and nardostachnone. Jatamansi increases the synthesis of collagen and elastin fibers, by which skin elasticity increases and wrinkles formation (aging) decreases.

**Fig 7. Jatamansi.****Arjuna:**

Arjuna consists of dried stem bark of the plant *Terminalia arjuna*, family *Combretaceae* (Fig 8). Arjuna contains tannins, triterpenoid saponins, arjunolicacid, arjunic acid, arjungenin, ellagic acid, arjunine andarjunolone. Collagen synthesis and epidermal barrier function are improved by pentacyclic triterpenoids found in Arjuna. It also increases skin moisturization. It strengthens the skin barrier and induces sebum production to reduce the signs of dry skin and protect the skin from external challenges. It also contributes to improved blood circulation for a better nutrient supply.

**Fig 8. Arjuna plant.****Neem:**

These are leaves and aerial parts of *Azadirachta indica*, family *Meliaceae* (Fig 9). Due to its antibacterial, insecticidal activities and neem extracts possess strong antioxidant and free radical scavenging properties used in aging.

**Fig 9. Neem plant.****Andrographis:**

It is the herb of *Andrographis paniculata*, family *Acanthaceae* (Fig 10). Neoandrographolide, one of the principal diterpene lactones, is isolated from a medicinal herb. It actively inhibits suggests the potential for skin Anti-Aging applications for both andrographolide and neoandrographolide.

Pomegranate:

These are fruits of *Punica granatum*, family *Lythraceae* (Fig 11). It contains ellagic acid, gallic acid, punicalins, and punicalagins. All are suitable for Anti-Aging applications, antioxidant and free radical neutralizing ingredients although some are not commercially available.



Fig 10. Leafy Andrographis plant.



Fig 11. Pomegranate.

Bramhi:

These are leaves of *Centella asiatica*, family *Apiaceae* (Fig. 12). Mainly it contains Triterpenoids. This herb maintains a balance in them, ensuring that your skin is not overly dry or oily. The main benefit of this is that it boosts collagen aging skin lacks collagen and needs supplements to nourish it.



Fig 12. Bramhi plant.

Papaya:

Papaya is fruits of *Carica papaya*, family *Caricaceae*. Vitamins, Calcium, Potassium, Magnesium, and Enzyme called papain are the main constituents. Antioxidants, as well as papain present in papaya fight against free radicals, provide Anti-Aging benefits.



Fig 13. Papaya plant with fruits.

DISCUSSION:

Phytochemicals derived from plants have a lot of skin beneficial properties related to UV protection, antioxidant action, matrix protection and skin hydration. Over the past decade, a lot of phytochemicals from the plant extracts have been explored and their biological activities well-studied *in vitro*. Therefore, there is a continuous requirement for more clinical studies with emphasis on the concentration of the ingredient in herbal products, their formulation, safety, and the anti-aging effect duration.

CONCLUSION:

Many natural drugs are identified as Anti-Aging herbs, which are devoid of side effects and abundantly available. This review gives direction to promising Anti-Aging herbal formulations in the future.

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